

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

RAAP, Adriaan, Y.
Internationaal Octrooibureau B.V.
Prof. Holstlaan 6
NL-5656 AA Eindhoven
PAYS-BAS

Date of mailing (day/month/year) 30 July 2001 (30.07.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference PHJ 99.024WO	
International application No. PCT/EP00/11250	International filing date (day/month/year) 10 November 2000 (10.11.00)

1. The following indications appeared on record concerning:		
<input type="checkbox"/> the applicant	<input checked="" type="checkbox"/> the inventor	<input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address KAMIYA, Takeo (deceased inventor)	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input checked="" type="checkbox"/> the person	<input type="checkbox"/> the name	<input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address MIYAZAKI, Akihiko 2-2-7-604, Miyazaki Miyamae-ku Kawasaki-shi Kanagawa Japan	State of Nationality JP	State of Residence JP
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: The person appearing in Box 2 above has been recorded as the legal representative of the deceased inventor appearing in Box 1. MIYAZAKI, Akihiko is applicant only for the US only.		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input checked="" type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input type="checkbox"/> the elected Offices concerned	
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer R. Chrem
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
25 May 2001 (25.05.2001)

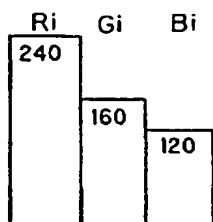
PCT

(10) International Publication Number
WO 01/37249 A3

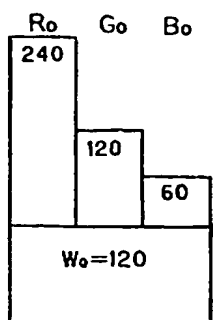
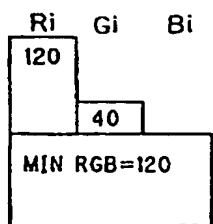
- (51) International Patent Classification⁷: **G09G 3/36** (72) Inventor: **KAMIYA, Takeo** (deceased).
- (21) International Application Number: **PCT/EP00/11250** (72) Inventors; and
- (22) International Filing Date: **10 November 2000 (10.11.2000)** (75) Inventors/Applicants (for US only): **HIRANO, Satoshi** [JP/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
YASUI, Masaru [JP/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (25) Filing Language: **English**
- (26) Publication Language: **English** (74) Agent: **RAAP, Adriaan, Y.**; Internationaal Octrooibureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (30) Priority Data: **11/321901** **12 November 1999 (12.11.1999)** **JP** (81) Designated States (national): **KR, US.**
- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). (84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).
- (71) Applicant (for US only): **MIYAZAKI, Akihiko** (legal representative of the deceased inventor) [JP/JP]; 2-2-7-604, Miyazaki, Miyamae-ku, Kawasaki-shi, Kanagawa (JP). Published:
— with international search report

[Continued on next page]

(54) Title: **LIQUID CRYSTAL DISPLAY APPARATUS WITH IMPROVED LUMINANCE CONTROL**



(57) Abstract: In an RGBW-type liquid crystal display device, luminance is improved by the addition of W sub-pixels while an image is displayed without any change in chromaticity of halftones. Digital corrected values for red, green and blue are obtained by adding a predetermined digital value for driving a W sub-pixel to each of RGB digital values which correspond respectively to pixels of an acquired image. A converting calculation is effected on the digital corrected values such that the ratio of these digital corrected values for red, green and blue is made equal to the ratio of the red, green and blue digital values corresponding to the pixels of said acquired image. The RGBW sub-pixels are driven with the converted values and the predetermined digital value for driving W sub-pixel to thereby display an image.



WO 01/37249 A3

WO 01/37249 A3



(88) Date of publication of the international search report:
7 February 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

Pct/EP 00/11250

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G09G3/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 541 295 A (CANON KK) 12 May 1993 (1993-05-12) page 3, line 15 -page 4, line 13 page 6, line 28 -page 9, line 24 figures 1,4,10-12	1-6
A	FR 2 534 052 A (SUWA SEIKOSHA KK) 6 April 1984 (1984-04-06) page 16, line 21 -page 17, line 4 figure 16	1-6
A	EP 0 330 361 A (GEN ELECTRIC) 30 August 1989 (1989-08-30) abstract	1-6

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *8* document member of the same patent family

Date of the actual completion of the international search

13 July 2001

Date of mailing of the international search report

19/07/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Farricella, L

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/11250

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0541295	A	12-05-1993	CA 2081643 A	08-05-1993
			DE 69226689 D	24-09-1998
			DE 69226689 T	28-01-1999
			JP 5241551 A	21-09-1993
			US 5929843 A	27-07-1999
FR 2534052	A	06-04-1984	JP 1984033 C	25-10-1995
			JP 4069370 B	06-11-1992
			JP 59061818 A	09-04-1984
			DE 3313804 A	06-09-1984
			GB 2130781 A, B	06-06-1984
			HK 69889 A	08-09-1989
			SG 40188 G	27-01-1989
			US RE33882 E	14-04-1992
			US 4600274 A	15-07-1986
			US 4716403 A	29-12-1987
			US 4653862 A	31-03-1987
EP 0330361	A	30-08-1989	DE 68906051 D	27-05-1993
			DE 68906051 T	02-09-1993
			JP 2005083 A	09-01-1990
			KR 145184 B	15-07-1998
			US 4892391 A	09-01-1990